since, if the expression developed has not been reduced to the form of a function of three rectangular coordinates, the development may contain an infinite number of terms, which are introduced by the operation without being essential to its final result. He takes for the example of such a case the equation of a spheroid, prominent between the equator and the poles, somewhat resembling the figure which was once attributed to Saturn; and he shows that its development in the form required will contain an infinite number of quantities arising from the expansion of a radical, which are not to be found in the original function.

Mr. Ivory considers, in the second place, the differential equation that takes place at the surface of a spheroid, and the demonstrations which have been published by Laplace and by Poisson; and he concludes that this equation is wanted neither for proving the possibility of the development, nor for calculating its terms; but in this plainer way of considering the matter, it appears that the development does not represent the given expression, when that expression is not an explicit function of three rectangular coordinates, in the same sense that it does when it is such a function. There is, therefore, a difficulty left unexplained; and we may be permitted to doubt whether so important a part of the celestial mechanics as that regarding the figure of the planets, rests with sufficient evidence on the doctrine laid down concerning the generality of the development.

On the late Extraordinary Depression of the Barometer. *By* Luke Howard, *Esq. F.R.S.* Read January 24, 1822. [*Phil. Trans.* 1822, *p.* 113.]

On the evening of the 24th of December last, Mr. Howard found the barometer at his house at Tottenham Green at 28·20 inches. The wind was moderate at S.E., the temperature 45°, and water boiled freely at 210°. At 11 P.M. the barometer fell to 27·96 inches, and at 5 A.M. on the 25th to 27·82, below which the author thinks it did not descend. By 8 A.M. it again reached 28. In the twenty-four hours preceding, 0·8 inch rain had fallen, but in the twenty-four hours following there fell none, nor was the wind strong. By midnight on the 25th the quicksilver reached 28·07 inches, and remained there during the twelve hours following,—a thing very rare in our climate. The quicksilver then rose in an uninterrupted curve, and on the 31st touched upon 30 inches, with fine weather. A diagram showing the state of the barometer during the last two months of 1821, as well as the quarter of the wind and quantity of rain fallen, accompanies this paper. During these two months the rain amounted to 10·10 inches, a quantity without precedent in the same space of time at London.